

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of: MURPHY, Robert H. et al.

Group Art Unit: 2622

Serial No. 10/521,031

Examiner: NGUYEN, L. T.

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For: FRONT LENS SHUTTER MOUNT FOR UNIFORMITY CORRECTION

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REPLY BRIEF

This Reply Brief under 37 C.F.R. §41.41 is submitted in reply to the Examiner's Answer of December 07, 2010, which was filed in response to Appellant's Appeal Brief of September 20, 2010, appealing to the Board the Patent Examiner's Final Office Action, mailed April 28, 2010, finally rejecting pending claims 1-4, 8-13, 15, 16 and 21-24 of the above reference application.

DEPOSIT ACCOUNT **190130** AUTHORIZATION – All necessary fees are intended to be included, however the Office is hereby authorized to charge any deficiency or credit any overpayment in the fees to the above deposit account, owned by BAE SYSTEMS Information and Electronic Systems Integration Inc. an authorized signator for which is Kevin M. Perkins, V.P. & Company Counsel, and for whom the undersigned are authorized agents.

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STATUS OF THE CLAIMS

Appellant notes that the Manual of Patent Examining Procedure MPEP Chapter 1207.02 includes the following requirement for an Examiner's Answer to an Appeal Brief:

(A) CONTENT REQUIREMENTS FOR EXAMINER'S ANSWER. The examiner's answer is required to include, under appropriate headings, in the order indicated, the following items:

(9) *Grounds of Rejection*. **For each ground of rejection maintained by the examiner and each new ground of rejection (if any), an explanation of the ground of rejection.**

Appellant further notes that the Examiner's Answer of 12/07/2010 in Section (3) on page 2 indicates the "Status of Claims" to be "Claims 1-4,8-13, 15-16,21-22,23-24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement" and in Section (6) on page 2 indicates that the "Grounds of Rejection to be Reviewed on Appeal" are "Whether Claims 1-4,8-13, 15-16,21-22,23-24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement." Also, in Section (9) of the Examiner's Answer an explanation is given ONLY of the ground of rejection under 35 U.S.C. 112 first paragraph.

Appellant therefore concludes that the claim rejections under 35 USC 103(a) of the final rejection of April 28, 2010 have been withdrawn, and that only the claim rejections under 35 U.S. C. 112, first paragraph remain.

. The Status of the claims is therefore:

Claims 1-4,8-13, 15-16,21-22,23-24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

The Examiner's rejection of claims 1-4, 8-13, 15-16, 21-24 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

ARGUMENT

The Examiner's rejection of claims 1-4, 8-13, 15, 16 and 21-24 is not well-founded and should be reversed.

In the Examiner's Answer of 12/7/2010, the Examiner has reaffirmed his rejection of independent claims 1, 10, and 15, and all claims dependent thereupon, as failing to comply with the written description requirement of 35 U.S.C. 112, first paragraph.

Specifically, the Examiner has stated that the new limitation "infra-red radiation emitted by the lens" on (lines 9-10, 15-16) of claim 1, on (lines 6, 14, and 20) of claim 10, and on (lines 7, 12-13, and 15) of claim 15 is not supported by the specification.

The Examiner's argument is perhaps best summarized in his own words on page 5 of the Examiner's Answer: "While the specification is clear that the FPA has sufficient sensitivity to detect the **sum** of all infra-red radiation emitted internally by the system, the specification is silent as to whether the radiation emitted **by the lens itself** has sufficient intensity to be detected by the FPA.

Appellant notes the following sections of the Manual for Patent Examination procedure, and the statutes and case law cited therein:

"MPEP 2163 I B

While there is no *in haec verba* requirement, newly added claim limitations must be supported in the specification through express, **implicit, or inherent** disclosure.

MPEP 2163 II A 3. Determine Whether There is Sufficient Written Description to Inform a Skilled Artisan That Applicant was in Possession of the Claimed Invention as a Whole at the Time the Application Was Filed

(b) To comply with the written description requirement of 35 U.S.C. 112, para. 1, or to be entitled to an earlier priority date or filing date under 35 U.S.C. 119, 120, or 365(c), each claim limitation must be expressly, **implicitly, or inherently** supported in the

originally filed disclosure. When an explicit limitation in a claim "is not present in the written description whose benefit is sought it must be shown that **a person of ordinary skill would have understood, at the time the patent application was filed, that the description requires that limitation.**" *Hyatt v. Boone*, 146 F.3d 1348, 1353, 47 USPQ2d 1128, 1131 (Fed. Cir. 1998). See also *In re Wright*, 866 F.2d 422, 425, 9 USPQ2d 1649, 1651 (Fed. Cir. 1989)

In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) ("To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is **necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.**"

The question, then, is whether or not the specification, when considered as a whole, would clearly convey to one of ordinary skill in the art that the FPA is able to detect the internal flux emitted by the lens itself, i.e. whether the internal flux emitted by the lens makes a detectable contribution to the total internal flux which is detected by the FPA.

Appellant asserts that anyone of average skill, considering the specification as a whole, would immediately and unquestioningly understand that the infra-red radiation emitted by the lens itself must make a detectable contribution to the total internal flux which is detected by the FPA. No other interpretation is reasonable, or even possible.

The Appellant believes that the Examiner has looked only for explicit statements in the specification regarding detection by the FPA of IR emitted by the lens, and has considered only isolated statements found within the specification, while failing to appreciate the meaning conveyed when the specification is considered as a whole.

Clearly, the specification is more than a collection of unrelated, disconnected statements about a thermal imaging system. The specification first states a problem, and then presents a solution to that problem. When reading the specification and considering it as a whole, someone of ordinary skill in the art would arrive at a complete understanding of the invention by considering both the statement of the

problem and the statement of the solution. In particular, one of ordinary skill would understand that the statement of the solution and the statement of the problem are interrelated, and would look to the statement of the solution to cast further light on the nature of the problem, and vice versa.

In stating the problem to be solved, the specification as filed explains that thermal imaging artifacts are caused by a failure to correct images for signal arising from "internal flux" detected by the FPA. See for example paragraph [0010]: "Conventionally, the location of the shutter in an uncooled IR imaging system is at the rear of the lens block. Resulting offset correction cannot, therefore, entirely correct for internal flux. Rather, some internal flux from the camera is blocked during the shuttering event."

The solution to this problem as disclosed by the specification is to place the shutter on the other side of the lens, so that it does not block the internal flux from reaching the FPA. Note for example the statement of paragraph [0029]: "Recall that placing the shutter 110 in front of the lens 120 allows internal camera flux to reach detectors of the FPA 125 during shutter calibration."

When the specification is considered as a whole, it is realized that no other statements are made and no other limitations are offered as to where the shutter should be located in relation to internal elements of the thermal imager, except for the requirement that the shutter be in front of the lens. One of ordinary skill in the art would therefore be drawn to the inescapable conclusion that the lens must at least make a detectable contribution to the internal flux which is detected by the FPA.

Logically, if repositioning the shutter solves the problem of internal flux being detected by the FPA, then it is necessary to specify the location of the shutter relative to at least one internal element which makes a detectable contribution to the internal flux. There are only two possibilities. Either the lens makes a detectable contribution to the internal flux detected by the FPA, or it does not. If it does not, then the location of the shutter relative to the lens is unimportant. Yet, the inventor describes the solution to

the problem only in terms of moving the shutter to the other side of the lens. Therefore, one of ordinary skill would logically and necessarily conclude that the invention is directed to an imager in which the lens makes a detectable contribution to the internal flux detected by the FPA.

If moving the shutter to the other side of the lens solved the problem of internal flux for some other reason, unrelated to IR emission by the lens, then the solution would be stated in different terms, and additional instructions would be provided as to where the shutter must be located in relation to other internal elements so as to solve the artifact problem. For example, if the goal were merely to move the shutter further from the FPA so as to allow more internal flux to reach the FPA, then the shutter would be placed as far from the FPA as possible. Yet the specification makes no recommendation that the distance of the shutter from the lens should be maximized, and in fact the specification emphasizes that the shutter can be very close to the lens. For example, paragraph [0019] states that "In one particular embodiment, the shutter has a lens side surface that is located within five millimeters of the front of the lens. For example, the shutter is located approximately 1 mm in front of the lens."

Time and again, throughout the specification, the location of the shutter according to the present invention is specified only in relation to the lens, and it is repeatedly stated that moving the shutter to the front of the lens solves the problem. There is no other requirement given in the specification as to where the shutter must be placed,

Note for example the statement made in paragraph [0032] of the specification: "Factors such as shutter speeds and aperture size will depend on the particular application, and the present invention is not intended to be limited to any one such configuration. Rather, the present invention can operate in **any one of a number of imaging applications where the shutter can be beneficially placed in front of the lens, so as to reduce or otherwise eliminate the delta in average FPA output data associated with the open and closed states of the shutter** 110, thereby improving uniformity of the system." In other words, the "delta in average FPA output" will be

necessarily reduced if the shutter is placed in front of the lens, and this will be true for virtually any configuration of thermal imager. The conclusion is inescapable that the lens makes a detectable contribution to the internal flux detected by the FPA.

Referring to Figure 1, it can be seen in this simplified depiction that the only result of placing the shutter 110 on one side of the lens 120 or the other is whether or not internal flux from the lens reaches the FPA 125 when the shutter is closed. There are no other internal elements of the imager which are indicated in Figure 1 as being potential sources of the internal flux, since all of the other elements shown in the figure are electronic components, which can be assumed to be thermally isolated from the FPA. If some other internal element were of concern as contributing to the internal flux detected by the FPA, then that other element would be included in Figure 1, and the positioning of the shutter would be shown in relation to that other element. Certainly, Figure 1 and the corresponding discussion in the specification make no sense if it is assumed that the FPA cannot detect internal flux emitted by the lens itself.

In summary, the specification clearly states that the problem is detection by the FPA of internal flux, which is understood to be infrared radiation emitted by internal elements of the thermal imager. The specification also clearly states that the solution offered by the present invention is placing the shutter on the other side of the lens. No other requirements are given as to where the shutter should be located, or regarding any other limitations as to the construction of the thermal based imager. The only internal elements shown in the figures, and the only internal elements mentioned specifically in the specification, are the FPA, the shutter, and the lens. And the only limitation given in the specification as to the location of the shutter in the present invention is that it must be "in front of the lens," i.e. between the lens and the scene, and not between the lens and the FPA.

Therefore, the conclusion is inescapable, and someone of ordinary skill would clearly have understood at the time the patent application was filed, upon reading the specification and considering it as a whole, that infra-red radiation emitted by the lens must make a measurable contribution to the internal flux detected by the FPA.

Appellant therefore asserts that the limitation "infra-red radiation emitted by the lens" in claims 1, 10, and 15 is fully supported at least by the inherent disclosure of the specification, and that claims 1, 10, and 15 fully meet the requirements of 35 U.S.C. 112 first paragraph. Claims 2-4, 8, 9, and 23-24 are dependent on claim 1, claims 11-13 are dependent on claim 10, and claims 16, and 21-22 are dependent on claim 15. These claims do not include explicit limitations regarding detection by the FPA of infrared radiation emitted by the lens, but were rejected solely due to their dependence on independent claims 1, 10, and 15. Since independent claims 1, 10, and 15 find support in the specification, as discussed above, dependent claims 2-4, 8, 9, and 23-24 also find support in the specification. Appellant therefore asserts that claims 2-4, 8-9, 11-13, 16, and 21-24 also fully meet the requirements of 35 U.S.C. 112 first paragraph.

Respectfully submitted,

/Douglas P. Burum, Reg. No. 65,019/

Customer No. 22500
BAE SYSTEMS
PO Box 868
Nashua, NH 03061-0868
Tel. No. (603) 886-6100, Fax. No. (603) 886-4796
patents@vernmaine.com

Vernon C. Maine, Reg. No. 37,389
Andrew P. Cernota, Reg. No. 52,711
David A. Rardin, Reg. No. 52,153
Douglas P. Burum, Reg. No. 65, 019
Michael J. Albanese, Reg. No. 66,977
Attorneys/Agents for Appellant